

Peer Assessment

MHF4U

Quiz Trigonometric Functions

18

Name

Date Sep 30, 2015

1. Do the required conversions.

[K 4]

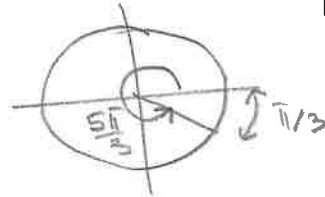
a) $12.5^\circ = ? \text{ rad} = 12.5 \frac{\pi}{180} \text{ rad} = 0.218 \text{ rad}$

b) $1.25 \text{ rad} = ?^\circ = 1.25 \frac{180^\circ}{\pi} = 71.62^\circ$

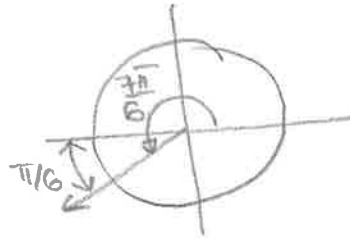
2. Find the exact value of trigonometric function. Show your work.

[A 5]

[2] a) $\sin \frac{5\pi}{3} = -\sin \frac{\pi}{3} = -\frac{\sqrt{3}}{2}$



[3] b) $\cos \frac{31\pi}{6} = \cos \left(4\pi + \frac{7\pi}{6} \right)$
 $= -\cos \frac{\pi}{6} = -\frac{\sqrt{3}}{2}$



3. Match the functions from the left side with a graph from the right side. Some functions have no corresponding graph. [A 4 marks]

A) [—]
 $f(x) = \sin(2x)$

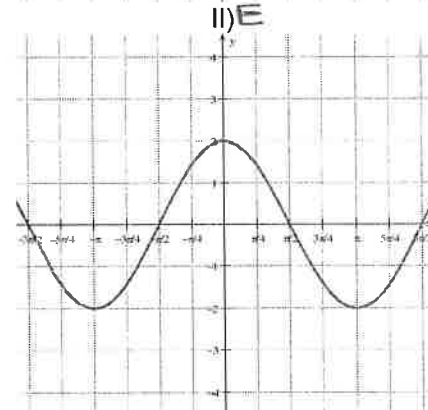
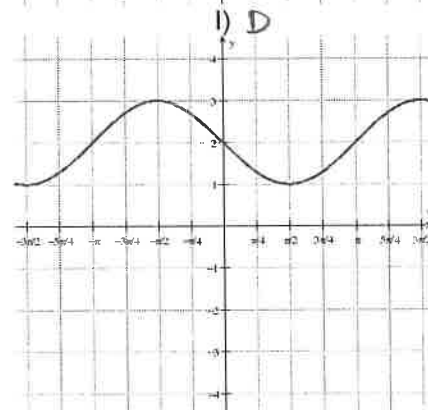
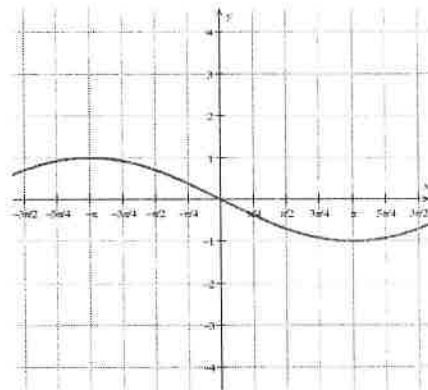
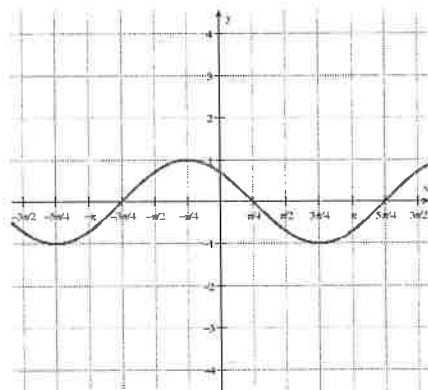
B) [III]
 $g(x) = 2 - \sin x$

C) [—]
 $h(x) = 2 \sin(0.5x)$

D) [I]
 $k(x) = \cos(x + \pi/4)$

E) [II]
 $p(x) = -\sin(0.5x)$

F) [IV]
 $q(x) = 2 \cos x$



I) D

II) E

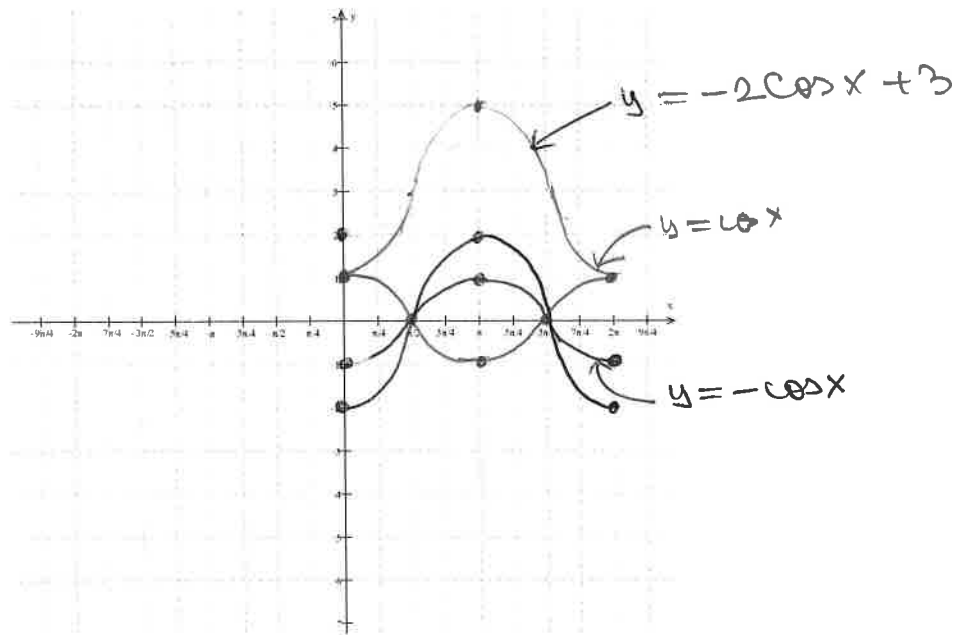
III) B

IV) F

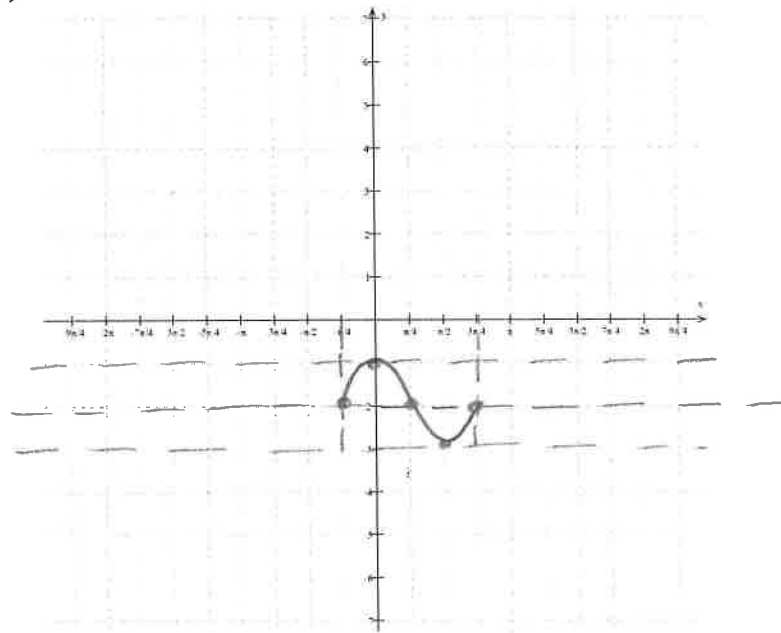
4. Graph the following functions by using a method of your convenience.

[A 5]

[2] a) $f(x) = -2\cos x + 3$



[3] b) $f(x) = \sin\left(2x + \frac{\pi}{4}\right) - 2 = \sin\left[2\left(x + \frac{\pi}{4}\right)\right] - 2$



$y_{axis} = -2$	$T = \pi$
$A = 1$	$B = -\frac{\pi}{4}$
$y_{max} = -1$	
$y_{min} = -3$	

1. Convert to radians.

$\alpha = 321.65^\circ$

[K/U 2]

$$\alpha = 321.65 \frac{\pi}{180} \approx 5.61$$

2. The point
- $P(-2, -3)$
- is on the terminal arm of the angle
- α
- . Find
- $\sin \alpha$
- ,
- $\sec \alpha$
- , and
- $\cot \alpha$
- .

x y

[K/U 3]

$$r = \sqrt{4+9} = \sqrt{13}$$

$$\sin \alpha = \frac{y}{r} = \frac{-3}{\sqrt{13}}$$

$$\sec \alpha = \frac{1}{\cos \alpha} = \frac{r}{x} = \frac{\sqrt{13}}{-2}$$

$$\cot \alpha = \frac{1}{\tan \alpha} = \frac{x}{y} = \frac{2}{3}$$

3. Describe the transformations involved. Do not graph.

[C3]

$$y = -2 \tan(\pi - 3x) + 4$$

$$= -2 \tan \left[-3 \left(x - \frac{\pi}{3} \right) \right] + 4$$

$$= 2 \tan \left[3 \left(x - \frac{\pi}{3} \right) \right] + 4$$

vertical translation
upward by 4 units

horizontal translation
to the right by $\frac{\pi}{3}$ units

horizontal compression
by a factor of $\frac{1}{3}$

vertical expansion by a factor of 2

$$y_{\max} = 1$$

$$A = |1 - 2| = 2$$

$$= -2 \sin \left[2 \left(x - \frac{\pi}{4} \right) \right] + 1$$

4. Graph by using a convenient method $y = -2 \sin \left(2x - \frac{\pi}{2} \right) + 1$.

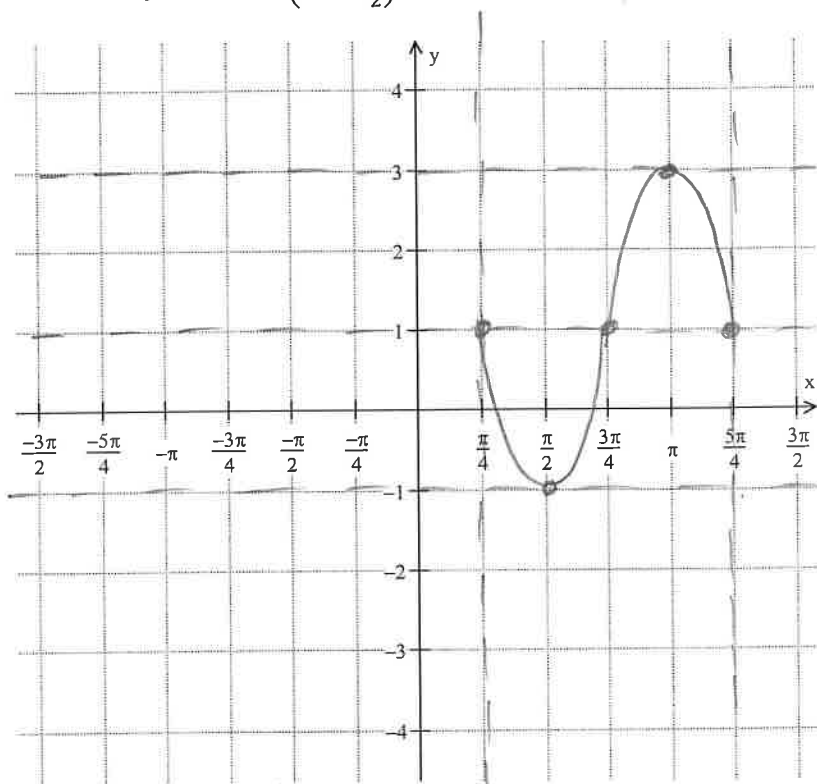
[A 4]

$$y_{\max} = 1 + 2 = 3$$

$$y_{\min} = 1 - 2 = -1$$

$$PS = \frac{\pi}{4}$$

$$T = \frac{2\pi}{2} = \pi$$



5. Find the domain and the range of the function $f(x) = -3 \csc(2x + \pi) + 5$.

[T 4]

$$2x + \pi \neq k\pi$$

(zeros of sine)

$$x \neq \frac{k\pi - \pi}{2}$$

(domain)

$$R = (-\infty, 2] \cup [8, \infty)$$

(range)

$$= \frac{-3}{\sin(2x + \pi)} + 5$$

